

REMARKS

Reconsideration of the present application is respectfully requested. Claims 1, 4, 6 and 9 were amended previously to indicate that the thickness of the recording film of each of the first and second information-recording layers is equal to or greater than 6 nm, and equal to or smaller than 13 nm. Support can be found in the specification at page 12, lines 3-4 ("each of the recording films 13 was 8 nm in thickness.") With that amendment, the invention is claimed with greater particularity, accounting for what the applicant regards as the invention. Previously, the claim indicated that the thickness of the recording film is equal to or greater than 6 nm, and equal to or smaller than 13 nm.

In the present Office Action, the Examiner has maintained the prior art rejections currently of record. Specifically, the claims are rejected under 35 U.S.C. §103 on the following grounds:

- Claims 1, 4 and 9 are rejected as unpatentable over Seo, et al. in view of Bechevet, et al.;
- Claims 1, 3, 4, 6, 8 and 9 are rejected as unpatentable over Seo, et al. in view of Rie, et al.;
- Claims 1, 3, 4, 6, 8 and 9 are rejected as unpatentable over Seo, et al. in view of Rijpers, et al.; and
- Claims 4 and 9 are rejected as unpatentable over Seo, et al. in view of Ogawa, et al.

With this amendment, the rejection of claim 4 and 9 under § 103, based on the combined teachings of Seo in view of Ogawa appear to be overcome, as Ogawa teaches a dual layer recording disc wherein the recording mediums are 11 and 37 nm in thickness.

The examiner maintains the rejections of the claims under §103, based on Seo in view of Bechevet, Seo in view of Rijpers, and Seo in view of Ogawa.

It is the Applicant's position that the present claims are patentable over the prior art combinations discussed above. The thin film optical recording mediums recited in the present claims, which recording mediums have a thickness of 6 to 13 nm, provide superior C/N ratios and erasing rates. The Applicant has demonstrated that the proportional ranges of the compounds of the optical recording medium, namely, Ge, Te, Sb and In are critical for realizing the improvements attained by the present invention, in the recording medium thickness specified in the claim.

Having carefully considered the specification, claims and references under consideration here, applicants believe that the examiner's conclusion that the claims are unpatentable over Seo in view of Bechevet, and Seo in view of the other secondary references mentioned above, is incorrect. Specifically, in view of the experimental results provided for in the specification, it appears that the C/N ratios obtained with thin films (i.e., 6 to 13 nm) optical recording mediums, having the specific compositions of Ge, Te, Sb, and In, are not predictable, as demonstrated by the unexpected results embodied in the data reported in the present specification. In fact, it is evident from the teachings in the specification that a particular proportional range of Ge, Te, Sb and In is critical for realizing the improved C/N ratios, the range being defined in the claims as having a number value between 0.04 and 0.3 (inclusive at both ends), and x having a number value between 4 and 8 (also inclusive at both ends).

As evidenced by the experimental data regarding embodiment 1, where the recording film is 8 nm, when y is within the aforementioned range, a high erasing rate of 25 db is

reported. Note that when y is outside of the range, i.e. $y = 0.02$, the erasing rate drops substantially. (See specification at page 13, table 1.)

Furthermore, regarding embodiment 2, where the recording film was also 8 nm thick, high C/N values result when $X \geq 4$. See table 2 at page 14 of the specification. However, as x increases, laser power for recording also increases, which as a result in determination of laser quality. Thus, as low recording power is preferred, and power increases substantially when $X > 8$, as shown in Table 2, it is apparent that optimum results are obtained when $X \leq 8$.

Further, the specification demonstrates that the cross erasing values remain favorable over substantially the entire claimed range of y , where I_n substitutes for a portion of the S_b . See table 5, page 20 of the present specification.

Thus, it is evident that the applicants, who disclose and claim an optical recording medium that is a combination of thin film mediums (6 nm to 13 nm) which performance properties are not predictable upon consideration the state of the art. Further, not only are the results attained by the claimed invention unpredictable, such results evidence an important and significant improvement that dissipates outside the claimed ranges for x and y . The examiner should consider that unpatentability based on overlapping ranges is overcome where the applicant shows criticality of the claimed range. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims....In such a situation, applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). See MPEP §716.02 - §716.02(g) for a discussion of criticality and unexpected results.

In the Advisory Action of July 2, 2008, the Examiner indicates that Rie discloses a thickness of the first recording layer in the range of 3 to 9 nm and that a thickness of the second recording layer is 12 nm (see lines 4-6 of the Advisory Action).

However, in the present invention, such a numerical limitation is a predetermined range of thickness. According to the disclosure of Rie, at least of the thickness of the second recording film is a given thickness, not a range of thickness.

Further, the present specification clearly discloses in Table 4 that the high erasing rate is obtained at 6 nm to 13 nm thickness. Thus, it is self-evident that such a numerical limitation for the thickness is significant with respect to a critical range.

Thus, it is respectfully submitted that rejection based on Rie's disclosure is overcome based on the showing made here, where criticality over the claimed range is demonstrated.

That such a showing has been made here is evidenced by the examples of the specification, where it is shown that for thin optical recording mediums, C/N drops off dramatically just beyond the parameters of the claimed range. In the applicant's view, patentability over the combined teachings of Seo in view of Bechevet, Seo in view of Rijpers, and Seo in view of Ogawa is established based on the demonstration of the criticality of the range.

In responding to Applicant's arguments, the Examiner indicates that Seo provides C/N ratios higher than those realized by the present invention. It is Applicant's position that a meaningful comparison cannot be drawn regarding the C/N ratios of 36 to 53 dB reported in Seo. Example 1 of the present application reports erasing rate, not C/N ratio,

and thus Seo and the present application report different information. Accordingly, the Examiner's interpretation of the data is mistaken.

Furthermore, Seo does not show the use of optical recording mediums having thicknesses within the 6 to 13 nm claimed range. For this reason, it is apparent that the data reported in Seo, and relied upon the Examiner as providing an apparent reason for the person of skill in the art to look to the teachings of Seo, is in fact, not appropriate here. Accordingly, the Examiner has failed to refute the Applicant's position concerning the present rejection.

Furthermore, in the Examiner's Response to Arguments, the Examiner states that Rijpers teaches optical recording mediums similar to the applicant's compositions, which have thicknesses within the claimed range. However, the fact is that nothing in Rijpers would lead a person with ordinary skill in the art to use the combination at issue here. Rijpers provides that the thicknesses lie between 3 and 25 nm, with a second layer possibly having a greater thickness, within the range of 3 to 50 nm. Accordingly, there is no reason to select the thicknesses within the claimed range. Rijpers at page 8, lines 1-3. Further, Rijpers teaches that Ge and Te recording films are preferred and that a recording film having the same elements as the present invention is but one of six different useful compositions. See Rijpers at page 7, lines 11-14. Accordingly, nothing in Rijpers shows the criticality of using the relatively narrow range of proportions of the elements of the optical recording mediums recited in the present claims, and the relatively narrow range of optical recording medium thickness. Only with hindsight, using the Applicant's claims and specification as a blue print, would the skilled artisan arrive at the specific recording medium composition and layer thicknesses recited in the present claim. The Examiner's approach here is impermissible.

Lastly, the Examiner has analyzed the data presented in the specification and concluded that such data is not persuasive of criticality. The key to such analysis is the fact that Tables 1 and 2 show recording mediums with 8 nm thickness, which are within the claim of range. According to the Examiner, there is no showing of data where the thicknesses are outside of the range. This is plainly incorrect. The third embodiment disclosed in the present specification at pages 15-18, clearly demonstrates the effect of recording medium thickness on the obtained results. Specifically, at page 17 of the specification, starting at line 14, it is indicated that,

“Since the erasing rate and the repetition characteristics (C/N values of the 8T signal after being overwritten 10000 times) are greatly degraded with the thickness of the recording film is reduced to 5 nm, it is preferred that the thickness of the recording film be equal to or greater than 6 nm. Further, according to the invention, since the repetition characteristics are deteriorated when the thickness of the recording film is increased to 15 nm, it is apparent from table 4 that an appropriate range for the thickness of the recording film is from equal to or greater than 6 nm to equal to or smaller than 13 nm.”

The foregoing demonstrates criticality of the optical recording medium thicknesses. The other portions of the specification that Applicant discussed in the present response, demonstrate criticality of the specific composition and thickness of the optical recording medium. In Applicant's view, the criticality necessary to overcome the prior art rejections has been clearly demonstrated. Accordingly, the rejections are overcome and the application is in condition of allowance.

Wherefore, based upon the foregoing, it is submitted that the present application is in condition of allowance, and a relatively early reply would be greatly appreciated.

Respectfully submitted,

A handwritten signature in black ink, appearing to be 'R. Danyko', written over the words 'Respectfully submitted,'.

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